

a plurality of pumps, each of the pumps having an inlet connected to at least one of the vacuum chambers and an outlet exhausting gas to atmospheric pressure and;

a system controller, for controlling gas pressure in at least one of the chambers, and the rate of evacuation of gas from the chambers.

2. (Withdrawn) The apparatus of claim 1, wherein the plurality of pumps is disposed within the envelope of space defined by the chambers.

3. (Withdrawn) The apparatus of claim 1, wherein the system controller is programmable to control the gas pressure by changing the speed of one of the pumps in relation to a signal from a chamber pressure gauge according to a programmed set of instructions for processing the substrate.

4. (Withdrawn) The apparatus of claim 1, wherein the system controller is programmable to control the rate of evacuation of gas by changing the speed of one of the pumps in relation to a signal from a chamber pressure gauge according to a programmed set of instructions for reducing condensation of moisture in the chamber.

5. (Withdrawn) The apparatus of claim 1, wherein the system controller is programmable to control the efficiency of at least one of the pumps by changing the speed of the pump.

6. (Withdrawn) The apparatus of claim 5, wherein the system controller is programmable to control the efficiency of at least one of the pumps by changing the speed of the pump between a low speed, a high speed and an idle speed.

7. (Withdrawn) The apparatus of claim 6, wherein the low speed is about 30 Hz, the high speed is about 100 Hz and the idle speed is about 30 Hz.

8. (Withdrawn) The apparatus of claim 6, wherein the low speed requires energy of about 500 to 750 watts, the high speed requires energy of about 3000 watts and the idle speed requires energy of about 500 watts.
9. An apparatus for containing a substrate, comprising:  
a plurality of components including at least one vacuum chamber, the components defining an peripheral envelope of space; and  
at least one pump having an inlet connected to the vacuum chamber and an outlet exhausting gas to atmospheric pressure, whereby the pump is locatable within the peripheral envelope of space defined by the components.
10. An apparatus for processing a substrate, comprising:  
a plurality of vacuum chambers defining an envelope of space in a clean room;  
and  
at least two pumps, each pump having an inlet connected to at least one of the chambers for evacuating gas in the chamber and an outlet that exhausts the evacuated gas to a pressure approximately equal to atmospheric pressure, the pumps located within the envelope of space defined by the chambers.
11. The apparatus of claim 10, wherein the plurality of vacuum chambers includes:  
at least one process chamber;  
at least one load-lock chamber; and  
at least one transfer chamber.
12. The apparatus of claim 11, wherein at least one of the process chambers and the load-lock chamber are elevated off of the clean room floor.
13. The apparatus of claim 12, wherein each of the pumps is disposed beneath one of the elevated process chambers and a fourth pump is disposed beneath one of the elevated load-lock chambers.

14. The apparatus of claim 12, wherein a first transfer chamber is disposed adjacent a second transfer chamber, the first and second transfer chambers having a plurality of process chambers disposed in a radial fashion there around and wherein two of the pumps are each disposed between adjacent process chambers, one pump is disposed beneath a load-lock chamber, and two pumps are disposed each beneath one of the process chambers.

15. The apparatus of claim 12, further comprising at least four process chambers and two load-lock chambers connected to the transfer chamber and at least one pump disposed beneath each of the process chambers and at least one pump disposed beneath one of the load-lock chambers.

16. The apparatus of claim 15, further comprising two pumps stacked vertically and disposed at least partially beneath one of the load-lock chambers.

17. The apparatus of claim 11, further comprising a transfer chamber with at least four process chambers and two load-lock chambers disposed therearound and six pumps disposed at a first end of the envelope beneath a gas supply panel, the pumps substantially within the footprint of the apparatus.

18. The apparatus of claim 11, wherein the pumps are each housed in an enclosure, the enclosure including noise and vibration reducing members.

19. The apparatus of claim 11, wherein the pumps include movable members to facilitate moving the pumps around a surface of a clean room floor.

20. The apparatus of claim 12, wherein two of the pumps are stacked vertically and are at least partially disposed under one of the chambers.

21. (Withdrawn) The apparatus of claim 10, wherein each of the pumps includes an exhaust line and wherein the exhaust lines are bundled together to form a single exhaust bundle.
22. (Withdrawn) The apparatus of claim 21, wherein the exhaust bundle is wrapped in a heater.
23. (Withdrawn) The apparatus of claim 22 wherein the heater includes a conductor carrying electrical current to heat gas within the exhaust lines.
24. (Withdrawn) The apparatus of claim 10 wherein each of the pumps includes an exhaust line and two or more of the exhaust lines are integrated into one common exhaust line for removing exhaust from two or more pumps.
25. An apparatus for processing a substrate, comprising:  
a transfer chamber;  
a plurality of process chambers connected to the transfer chamber; and  
a plurality of pumps disposed adjacent the transfer chamber in an alternating relationship with the process chambers within a perimeter of the apparatus as defined by the outermost edges of the chambers.
26. The apparatus of claim 25, wherein at least one of the pumps is mounted on another pump.
27. A pump for use with a substrate processing apparatus, comprising:  
an inlet connected to a vacuum chamber and an outlet exhausting gas to atmospheric pressure; and  
the pump constructed and arranged to operate within an envelope of the apparatus.

28. (Withdrawn) The pump of claim 27, wherein the pump is surrounded by an enclosure, the enclosure having a substantially planar top surface, bottom surface, two side surfaces and two end surfaces, and constructed and arranged to reduce noise and vibration emanating from the pump and surface temperature.

29. The pump of claim 27, further including a vacuum chamber disposed above the pump whereby the pump and chamber are housed together in a frame, the pump within the envelope of space defined by the outer perimeter of the vacuum chamber.

30. (Withdrawn) The pump of claim 28, wherein the height, length and width ratio of the enclosure is about 1:2:1.

31. (Withdrawn) The pump of claim 28, wherein the height, length and width ratio of the enclosure is about 2:1:1.

32. (Withdrawn) The pump of claim 28, wherein the noise level of the pump when measured at a base pressure and a distance of 1 meter is equal to or less than 58 dB.

33. (Withdrawn) The pump of claim 28, wherein the pump enclosure has a plurality of machine interfaces, all of which are located on a single surface of the pump enclosure.

34. (Withdrawn) The pump of claim 28, wherein the bottom surface of a first pump enclosure is fixable to a top surface of a second pump enclosure, the pump enclosures thereby stackable.

35. (Withdrawn) The pump of claim 34, wherein the top surface of the second pump enclosure has a plurality of landing indentations, the landing indentations constructed and arranged to receive a plurality of similarly spaced landing protrusions extending from the bottom surface of another pump enclosure.

36. (Withdrawn) The pump of claim 34, wherein the bottom surface of the first pump enclosure includes at least one tab extending downward therefrom, the tab including an aperture there through and wherein the top surface of the second enclosure includes at least one tab projecting upward therefrom, the tab including an aperture there through, whereby when a first pump is stacked upon a second pump, the apertures align to receive a fastener thereby fixing the first and second pumps to each other.

37. (Withdrawn) The pump of claim 28, wherein a first end of the bottom surface of the pump enclosure includes two wheels partially recessed therein, and a second end of the bottom surface of the pump enclosure includes at least one pivoting wheel and a handle assembly facilitating the movement of the pump along a clean room floor by personnel.

38. (Withdrawn) The apparatus of claim 28, wherein the pump is mountable on a layer of vibration absorbing material, the plate located between and affixed to the bottom surface of the pump enclosure and the clean room floor.

39. The pump of claim 27, wherein the pump is a multiple inlet pump operating at least two chambers.

40. (Withdrawn) The pump of claim 28, wherein the pump enclosure includes a ventilation system capable of drawing air through the enclosure from a first end of the enclosure to a second end of the enclosure where the air is exhausted to a ventilation exhaust line.

41. (Withdrawn) The pump of claim 40, wherein the ventilation system further includes a shroud constructed around an exhaust connection of the pump, the shroud in communication with the ventilation exhaust line whereby air around the exhaust connection is captured and exhausted through the ventilation exhaust line.